

Appl. No. : 09/801,542
Filed : March 7, 2001

REMARKS

In response to the Final Office Action mailed August 30, 2004 and the Advisory Action mailed December 16, 2004, Applicants respectfully request the Examiner to reconsider the above-captioned application in view of the above amendments and the following comments.

Claim rejections and amendments

Claims 35, 37, 38, 43-45 and 50-56 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. in view of Suntola et al. and Yokoyama et al. Claims 46 and 47 stand rejected over the combination of Kim, Suntola and Yokoyama and in further view of Tseng. Claim 57 stands rejected over the combination Kim, Suntola, Yokoyama, and Tseng in further view of Lopatin et al. Claims 35, 39-41, 43, 44, 48, and 50-56 stand rejected over the combination of Kim and Eichman. Claim 42 stands rejected over the combination of Kim and Eichman in further view of Kukli et al.

In making these rejections, the Examiner states that the primary reference (Kim) discloses an ALD reactor where the substrate support temperature is controlled independently of the reaction chamber. The Examiner admits that this reference does not explicitly teach that the substrate support temperature is maintained at a first temperature and the chamber wall is maintained at a second temperature, the difference between the two temperatures selected to maintain a lower rate of ALD film growth upon the chamber walls as compared to the substrate. To address this deficiency, the Examiner states that Suntola and Eichman teach selecting the temperature of the chamber walls to maintain a lower rate of ALD film growth upon the chamber walls as compared to the substrate.

Applicants have argued that none of the Examiner's references recognize the nested temperature windows disclosed in the present application, where the inner window represents optimal ALD growth and the outer window represents lower deposition rates but still suitable for ALD mechanisms. In response to this argument, the Examiner states that Applicants' "claims do not require such a 'nested temperature window' limitation." See Advisory Action mailed December 16, 2004.

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In order to advance prosecution, Applicants have chosen to amend independent Claims 35, 44, 50 and 57 to emphasize certain features and aspects of the claimed methods for growing a thin film on a substrate. For example, Claim 35 now recites, in part, that “the first temperature and the second temperature are within an ALD temperature window and the difference between the first temperature and the second temperature is selected to maintain a lower rate of atomic layer deposition (ALD) film growth upon the chamber wall as compared to the substrate.” Claim 44 now recites, in part, a method comprising “maintaining at least portions of the chamber walls that are exposed to the vapor-phase reactants at a second temperature that is within the ALD temperature window.” Claim 50 now recites “controlling a temperature of at least those portions of the chamber walls exposed to reactants, such that both the temperature of the substrate and the temperature of the walls are within an ALD temperature window.” Claim 57 recites, in part, a method comprising maintaining the temperature of the substrate “within a first ALD temperature window such that approximately one monolayer is deposited per full cycle and maintaining the chamber wall temperature within a second ALD temperature window both the temperature of the substrate and the temperature of the walls are within an ALD temperature window.”

Applicants respectfully submits that independent Claims 35, 44, 50 and 57 are in condition for allowance. The remaining pending claims depend upon these independent claims and, for at least this reason, these dependent claims are also in condition for allowance.

Request for Continued Examination.

Applicants also that this Amendment is being filed with a Request for Continued Examination.

CONCLUSION

For the foregoing reasons, it is respectfully submitted that the rejections set forth in the outstanding Office Action are inapplicable to the present claims and specification. Accordingly, early issuance of a Notice of Allowance is most earnestly solicited.

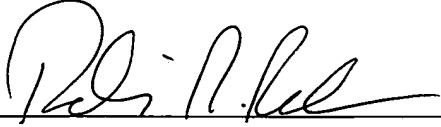
The undersigned has made a good faith effort to respond to all of the rejections in the case and to place the claims in condition for immediate allowance. Nevertheless, if any undeveloped issues remain or if any issues require clarification, the Examiner is respectfully requested to call Applicants’ attorney in order to resolve such issue promptly.

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Respectfully submitted,

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